IN THE CLAIMS:

1. (CURRENTLY AMENDED) An intermediate network device having a plurality of ports for sending and receiving network messages to and from one or more entities of a computer network at least some of which are segregated into a plurality of virtual local area network (VLANs) defined within the computer network, the intermediate network device comprising:

a compact-Generic Application Registration Protocol (GARP) VLAN Registration Protocol (GVRP) application component associated with a selected port, the compact-GVRP application component having:

a GARP Information Declaration (GID) component configured to maintain VLAN registration state for the selected port in response to receiving attribute events for the VLANs;

a compact-GVRP encoder/decoder unit; and

a GVRP protocol data unit (PDU) message generator, wherein

the compact-GVRP encoder/decoder unit is configured to compute encoded values, in accordance with an encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value, and

the GVRP PDU message generator loads the encoded values computed for all of the VLANs defined within the computer network within a single GVRP PDU message for transmission from the selected port.

2. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 1 wherein the encoding algorithm is a number base conversion algorithm.

3. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 2 wherein the number base conversion algorithm is

$((((E_X \times 5 + E_{X+1}) \times 5 + E_{X+2}) \times 5 + E_{X+3}) \times 5 + E_{X+4}) \times 5 + E_{X+5}$ and wherein E_X corresponds to the attribute event for the first VLAN in the set, E_{X+1} corresponds to the attribute event for the second VLAN in the set, E_{X+2} corresponds to the attribute event for the third VLAN in the set, E_{X+3} corresponds to the attribute event for the fourth VLAN in the set, E_{X+4} corresponds to the attribute event for the fifth VLAN in the set, and E_{X+5} corresponds to the attribute event for the sixth VLAN in the set.

4. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 1 wherein the compact-GVRP encoder/decoder unit is configured to decode an encoded value contained in a compact-GVRP PDU message, that was encoded using the encoding algorithm, to yield attribute event information for a set of VLANs.

5. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 1 wherein the compact-GVRP application component is configured to generate and send a GVRP PDU message containing a just_kidding message.

6. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 5 further comprising:

a leave timer;

a just_kidding timer; and

a just_kidding state machine,

wherein the just_kidding state machine is configured to start the leave timer and to restart the just_kidding timer upon sending the GVRP PDU message containing the just_kidding message.

7. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 6 comprising:

a leave_all timer; and

a leave_all state machine,

wherein the leave_all state machine is configured to enter an active state upon sending the GVRP PDU message containing the just_kidding message and the compact-GVRP application component is configured to generate and send a GVRP PDU message that is configured to cause network entities that receive it to respond with one or more GVRP PDU messages.

8. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 7 wherein the leave timer is set to a high value relative to the leave_all timer.

9. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 7 comprising:

a mode selection unit configured to be in one of a compatible mode, a fast compact mode or a slow compact mode,

wherein the mode selection unit is configured to enter the compatible mode if after the compact-GVRP application component sends the GVRP PDU message containing a just_kidding message and the mode selection unit is either in the fast compact mode or the slow compact mode and the compact-GVRP application component receives a conventional GVRP PDU message.

10. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 7 comprising:

a port partner variable configured to hold a source identifier,

wherein the compact-GVRP application component is configured to place the source identifier in the port partner variable upon processing a received GVRP PDU message containing a negotiation message with a source identifier.

11. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 10 wherein the compact-GVRP application is configured to enter a slow compact mode upon processing a received GVRP PDU message containing a negotiation message with a source identifier that does not match the content of the port partner variable.

12. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 10 wherein the compact-GVRP application is configured to enter a fast compact mode upon processing a received GVRP PDU message containing a negotiation message with a source identifier that matches the content of the port partner variable.

13. (PREVIOUSLY PRESENTED) An intermediate network device as defined in claim 1 wherein the compact-GVRP application component is configured to generate a mixed format GVRP PDU message containing a conventional attribute structure as well as fields loaded with the encoded values.

14. (CURRENTLY AMENDED) In an intermediate node having a plurality of ports for sending and receiving network messages to and from one or more entities of a computer network at least some of which are segregated into a plurality of virtual local area network (VLANs) defined within the computer network, a method for conveying VLAN membership information comprising the steps of:

for a given set of VLANs defined within the computer network, computing an encoded value, in accordance with an encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of the given set of VLANs into the encoded value; and

loading encoded values for all of the VLANs defined within the computer network into a single GVRP protocol data unit (PDU) message for transmission at one or more ports in the plurality of ports.

15. (PREVIOUSLY PRESENTED) A method as defined in claim 14 further comprising the step of:

decoding an encoded value, that was encoded using the encoding algorithm and is contained in a compact-GVRP PDU message, to yield attribute event information for a set of VLANs.

16. (PREVIOUSLY PRESENTED) A method as defined in claim 14 further comprising the steps of:

generating a GVRP PDU message containing a just_kidding message;

sending the GVRP PDU message containing the just kidding message out one or more ports of the plurality of ports; and

restarting a just_kidding timer.

17. (PREVIOUSLY PRESENTED) A method as defined in claim 16 further comprising the step of:

entering a slow compact mode upon the expiration of the just_kidding timer and the non-receipt of a conventional GVRP PDU message.

18. (PREVIOUSLY PRESENTED) A method as described in claim 16 further comprising the steps of:

entering one of a slow compact mode or a fast compact mode;

receiving a conventional GVRP PDU message; and

reverting to a compatible mode.

19. (PREVIOUSLY PRESENTED) A method as defined in claim 14 comprising the steps of:

receiving a first compact-GVRP PDU message wherein the first compact-GVRP PDU message contains a first source identifier.

20. (PREVIOUSLY PRESENTED) A method as defined in claim 19 comprising the steps of:

receiving a second compact-GVRP PDU message wherein the second compact-GVRP PDU message contains a second source identifier that does not match the first source identifier; and

entering a slow compact mode.

21. (PREVIOUSLY PRESENTED) A method as defined in claim 19 comprising the steps of:

receiving a second compact-GVRP PDU message wherein the second compact-GVRP PDU message contains a second source identifier that matches the first source identifier; and

entering a fast compact mode.

22. (CURRENTLY AMENDED) An apparatus having a plurality of ports for sending and receiving network messages to and from one or more entities of a computer network at least some of which are segregated into a plurality of virtual local area network (VLANs) defined within the computer network, the apparatus comprising:

means for maintaining VLAN registration state for a selected port in response to receiving attribute events for the VLANs;

means for computing an encoded value, in accordance with an encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into the encoded value;

means for loading encoded values for all of the VLANs defined within the computer network into a single GVRP protocol data unit (PDU) message for transmission from a port in the plurality of ports.

23. (CURRENTLY AMENDED) A computer readable medium comprising computer executable instructions for:

computing an encoded value, in accordance with an encoding algorithm that encodes a plurality of, attribute events that are each associated with a different VLAN of a given set of VLANs into the encoded values; and

loading encoded values for all of the VLANs defined within the computer network into a single GVRP protocol data unit (PDU) message for transmission from a port in the plurality of ports.

24. (NEW) A method comprising:

maintaining virtual local area network (VLAN) registration state at a port of an intermediate network device in a computer network, where a plurality of VLANs are defined within the computer network;

grouping the plurality of VLANs defined within the computer network into sets of two or more different VLANs;

for each set of two or more different VLANs, computing an encoded value with an encoding algorithm that encodes attribute events associated with each VLAN of the two or more different VLANs of the set into a single encoded value for the set; and

loading each encoded value into a respective field of a VLAN registration protocol message such that encoded values encompassing all of the VLANs defined within the computer network are included within the VLAN registration protocol message; and

transmitting the VLAN registration protocol message including the encoded values encompassing all of the VLANs defined within the computer network from the intermediate network device to one or more other network devices within the computer network.

25. (NEW) A method as defined in claim 24 wherein the plurality of VLANs defined within the computer network includes more than 373 different VLANs.

26. (NEW) A method as defined in claim 24 wherein the plurality of VLANs defined within the computer network includes at least 4094 different VLANs.

27. (NEW) The intermediate network device as defined in claim 1 wherein the VLANs defined within the computer network include more than 373 different VLANs.

28. (NEW) A method as defined in claim 14 wherein the VLANs defined within the computer network include more than 373 different VLANs.